

**What is claimed is :**

1. A process for determining the position of the center of gravity of head equipment worn by a user relative to the center of gravity of the user's head, the head equipment including display devices, comprising following steps:
  - determining the position of the head equipment's center of gravity in a first triaxial reference frame;
  - determining the position of the center of gravity of the user's head by using a digital model that takes into account the anatomical data of the head, this center of gravity being determined in a second triaxial reference frame positioned relative to said first triaxial reference frame; and
  - determining the position of the head equipment's center of gravity in said second triaxial reference frame.
2. The process according to claim 1, wherein the said digital model is a three-dimensional mapping of the external surface of the user's head, said anatomical data being points on said surface.
3. The process according to claim 2, wherein the said three-dimensional mapping includes identifiable anthropometric points that enable the head to be referenced in said first triaxial reference frame of said head equipment.
4. The process according to claim 3, wherein the said anthropometric points are the right and left tragi or the right and left infra-orbitals or the occipital condyles or the nasion and the pupils of the right and left eyes.
5. The process according to claim 2, wherein the means used to determine the points of said three-dimensional mapping are optical cameras or laser-scanning optical scanners.

6. The process according to claim 2, wherein the determination of the position of the center of gravity of the head is obtained by first determining the position of the center of volume of said head.
7. The process according to claim 6, wherein the said determination of the position of the center of volume of the head includes the following steps:
  - selecting at least one sectional plane delimiting the volume of the head at neck level;
  - selecting a common point in this sectional plane;
  - meshing the mapping points of the head's external surface to form adjacent triangles, the corners of each triangle coinciding with one point P;
  - decomposing the volume of the head into tetrahedra, each tetrahedron being formed by the three points of one triangle and said common point ;
  - calculating the center of volume of each tetrahedron ;
  - calculating the total volume of the head by adding the elementary volumes of all the tetrahedra ; and
  - calculating the position of the center of volume of the head by calculating the barycenter of the centers of volume of all the tetrahedra.
8. The process according to claim 6, wherein the said determination of the position of the center of volume of the head includes the following steps:
  - selecting at least one sectional plane delimiting the volume of the head at neck level;
  - creating a digital object from the points of said head mapping and said sectional plane, said digital object being exploitable by CAD software; and

calculating the position of the center of volume using this CAD software.

9. The process according to claim 7, wherein the said sectional plane is unique and determined substantially by the left gonion, the right gonion and the inion.
10. The process according to claim 7, wherein the head volume is substantially delimited by a combination of two sectional planes, the first sectional plane delimiting the volume of the head to the front and the second sectional plane delimiting the volume of the head to the rear, the first sectional plane being defined substantially by the left and right gonions and the right and left occipital condyles, the second sectional plane being defined by the right and left occipital condyles and the inion.
11. The process according to claim 7, wherein the position of each of the three coordinates of the center of gravity of the head in the triaxial reference frame is obtained by the sum of products of two factors, the first factor being a constant, the second factor being an anthropometric parameter of said head.
12. The process according to claim 11, wherein the said anthropometric parameter is the coordinate of the center of volume of the head on the same axis or the length of the head or the width of the head.
13. The process according to claim 1, wherein the said digital model is a volumetric and densitometric model of the various constituents of the head.
14. The process according to claim 13, wherein the said digital model is established using NMR (Nuclear Magnetic Resonance) tomodesitometric imaging means.

15. A process of risk evaluation for a user wearing head equipment in operational conditions, the said process comprising a stage of determination of the position of the center of gravity of the head equipment relative to the center of gravity of the user's head, performed according to claim 1.
16. A process for execution of a digital model simulating a user wearing at least one head equipment, the said process comprising a stage of determination of the position of the center of gravity of the head equipment relative to the center of gravity of the user's head, performed according to claim 1.
17. The process according to claim 8, wherein the said sectional plane is unique and determined substantially by the left gonion, the right gonion and the inion.
18. The process according to claim 8, wherein the head volume is substantially delimited by a combination of two sectional planes, the first sectional plane delimiting the volume of the head to the front and the second sectional plane delimiting the volume of the head to the rear, the first sectional plane being defined substantially by the left and right gonions and the right and left occipital condyles, the second sectional plane being defined by the right and left occipital condyles and the inion.
19. The process according to claim 8, wherein the position of each of the three coordinates of the center of gravity of the head in the triaxial reference frame is obtained by the sum of products of two factors, the first factor being a constant, the second factor being an anthropometric parameter of said head.